The poor state of Indigenous health is in part attributable to poor housing and household environments. The Housing Improvements and Child Health study is a large research project that aims to improve understanding of the relationship between the household environment and child health in remote Indigenous communities, particularly the impact of improved housing stock. The collection of remote community household data for research purposes presents a number of challenges. This paper relates our experiences in this area. We discuss issues of survey design, including language, pilot testing, and innovations in the assessment of household function and condition. We then consider the processes of engaging remote communities in the study and administration of the surveys, including informed consent, the effect of researcher characteristics on data collection, confidentiality and the process of feeding back survey findings to community stakeholders. We conclude with a discussion of the critical lessons from our fieldwork experience. In discussing these issues, we aim to promote discussion of the challenges of working in remote Indigenous communities, and ultimately to improve fieldwork practice and the quality and use of research data in improving living conditions in remote communities.

Key words: Indigenous; Aboriginal; Housing; Data Collection; Child Health; Environmental Health

The inadequacy of housing in Indigenous communities has been noted for some time, with the problem being particularly acute in remote regions of the Northern Territory (Australian Bureau of Statistics 1996; Jones 1994). In recent years, the role of the environment as a determinant of Indigenous health has received increasing attention (Pholeros, Rainow & Torzillo 1993; Pormpuraaw Community Council et al. 1997). Research on the built and social environment is slowly advancing our understanding of how the environment contributes to ill health, and importantly, how it can promote health for Aboriginal and Torres Strait Islander Australians. However, collecting data on environmental health issues from Indigenous communities is a difficult process requiring much cultural sensitivity (Moran 1997; Trudgen 2000). Recent work has emphasised the need to collaborate with Indigenous people and organisations at all stages of the research process (Australian Institute of Aboriginal and Torres Strait Islander Studies [AIATSIS] 2000; Humphery 2001; NHMRC 2003). This growing body of work has come to be known as the Indigenous Research Reform Agenda (Rigney 1999). Issues identified by this agenda include the need for Indigenous participation in the formulation of research and in designing data collection tools, and the provision of timely feedback to communities (Henry et
Housing surveys in particular have raised questions of immediate and long-term benefits to those surveyed (Miller & Rainow 1997). While those conducting environmental health research in Indigenous communities have many issues to tackle, the experience of dealing with these issues is seldom reported in the literature. Fieldwork experiences are not often considered legitimate research findings, and hence are not published. We think that the practical and ethical challenges of this work will be assisted by the discussion of fieldwork experiences, including sharing information on critical success factors. This paper presents the experiences of researchers in a major study of remote community housing.

The Project

Project aims

The Housing Improvement and Child Health study (HICH) was funded in 2002 by the National Health and Medical Research Council, with additional funding provided by the Northern Territory Department of Community Development, Sport and Cultural Affairs, and the Department of Health and Community Services. The project is a partnership between the Menzies School of Health Research, the Indigenous Housing Authority of the Northern Territory (IHANT) and the participating Indigenous communities. The general aim of the study is to assess the impact of improved housing stock on the health of young children, and to understand the factors that may mediate this relationship. The HICH study builds on previous studies which have indicated that improvements in infrastructure can result in better health outcomes, but which have not been able to provide conclusive evidence (Guthridge et al. 2000; Hardy 1998; Pholeros, Rainow & Torzillo 1993).

The HICH study is being conducted in 11 communities in the Northern Territory where there has been a significant injection of new housing stock through the National Aboriginal Health Strategy - Environmental Health Program, and other large infrastructure programs. Improvements in child health will be assessed through a comprehensive household survey in the year before and the year after the injection of new housing stock in the community, and through an audit of children’s medical records over the same time period. The comments made in this paper are based largely on the experience of the first round of data collection, as the second round (conducted in the year after new housing stock was built) is still in progress.

The survey design was based on the conceptual framework of the study (see Figure 1). This framework builds on the work of Pholeros and colleagues that identified nine Healthy Living Practices (henceforth HLPs) as an environmental health basis for assessing household infrastructure, or ‘health hardware’ (Pholeros, Rainow & Torzillo 1993). At the heart of the model, it is recognised that the presence and quality of Household Infrastructure determines the ability of residents to carry out HLPs, which in turn determines the health of children living in the household environment. In addition, the framework acknowledges Household Composition and Process factors (such as the social and economic circumstances of residents, the number of young children and carers in a household, and the number of people who smoke inside the house), and Community Environment/Neighbourhood factors (such as the condition of the general community environment and staffing of key community organisations) as elements influencing the core pathway from household infrastructure to child health. The framework also recognises the Condition of the Household Environment and Carer Health, both physical and mental, as important determinants of child health.
**Survey design**

In order to address all aspects of the conceptual framework, six distinct mechanisms for data collection were designed. The community environment was assessed using a *Community Survey*, which involved direct observation of the community environment and an interview with council staff in the presence of Indigenous councillors. This survey was based on sections of the Community Housing and Infrastructure Needs Survey (Australian Bureau of Statistics 2002a). The household infrastructure, facilities for HLPs and the condition of the household environment were assessed with a detailed *Housing Survey* that incorporated a number of innovative components (see discussion below). Household composition and process were assessed with the *Householder Interview* conducted with the person self-identified as the head of the household, and a *Carer Interview* conducted with those who self-identified as the primary or secondary carer of children under seven years of age. Child health was assessed using the Child Health Interview, conducted with carers, and an *Audit of Medical Records* held in the local community clinic. Figure 2 provides an overview of the variables collected within each of the six elements of data collection.

**The Housing Survey**

The Housing Survey was based largely on the IHANT Environmental Health Survey and the National Indigenous Housing Guide (Department of Family and Community Services 2003; Runcie & Bailie 2000). It also incorporated a number of innovative elements, in addition to the assessment of whether health hardware could adequately support the HLPs. The aim of these innovations as a whole was to obtain a more functional, contextualised and holistic picture of household infrastructure than most previous housing survey methodologies have allowed, and to control for potential...
Figure 2: Overview of Variables collected

- **Child health record audit**
  - Presentations with acute illness
  - Growth parameters

- **Child health interview**
  - Houses lived in
  - Childcare
  - Breastfeeding
  - Non-acute health problems
  - Episodes of illness

- **Carer interview**
  - Children in their care
  - Relationship to Householder
  - Travel to traditional lands
  - Household relocation
  - Self-assessed health
  - Smoking
  - Social support
  - Social stress
  - Financial stress
  - Education
  - Employment & income
  - Affect & depression risk

- **Householders interview**
  - Overcrowding
  - Travel to traditional lands
  - Household members with community positions
  - Household relocation
  - House maintenance
  - Smoking
  - Social stress
  - Financial stress
  - Phone and electricity
  - Education
  - Employment & income
  - Home ownership & rent
  - Self-efficacy

- **Housing survey**
  - Detailed assessment of health hardware and software – aimed at determining the extent to which they enabled the conduct of healthy living practices (HLPs)

- **Community survey**
  - Community access
  - Housing infrastructure
  - Staffing
  - Public ablution facilities
  - Support centres – education, health.

- **Housing survey**
  - Detailed assessment of health hardware and software – aimed at determining the extent to which they enabled the conduct of healthy living practices (HLPs)

Confounding (see Thomson, Petticrew & Morrison 2001).

**a) Condition and Function separated**

In keeping with the conceptual framework, the hygienic condition of household infrastructure was assessed separately from its function. A focus purely on function might be misleading with regard to the effect of housing on health. A well-functioning house can be hazardous to health if in a poor hygienic condition. Conversely, a poorly-functioning house will have a different effect on the health of householders depending on the state of hygiene (EHP et al. 2004; World Health Organization 2002). Thus the presence of organic contaminants both inside and outside the house was recorded.

**b) Health software**

The concern of the study with a more holistic approach to household function led to the inclusion of ‘health software’ items on the Housing Survey. The presence of washing detergent and soap, toilet paper, mops and buckets, and other cleaning products was assessed observationally.

**c) Assessment of Infrastructure to support HLPs**

The conventional approach to Indigenous housing assessment involves a structured assessment of each component of household infrastructure. Another innovation in the HICH survey was the inclusion, in addition to this structured assessment (Runcie & Bailie 2000), of _overall_ assessments of household function and condition. After completing the structured assessment, the researcher would assign an overall score to the household function and the household condition as they relate to the ability of householders to conduct HLPs. The use of both types of assessment in the HICH study will allow the study to explore the potential role of an overall assessment of house function and condition by an experienced surveyor.
*d) Focus on function*

The more holistic approach to function was also reflected in the scale used to assess each aspect of household infrastructure. Rather than using a dichotomous scale (working; not working), a five-point scale was used: fully functional; minor maintenance needed; major maintenance needed; broken, not working; not present. This approach leads to a more accurate assessment of function than a binary scale. For example, if a nut is missing from a tap handle, a binary scale may record this tap as not functioning, while the HICH Housing Survey would give this a score of 2 (minor maintenance required). This score reflects the fact that householders could still use the tap effectively (and carry out related HLPs) at the time of the survey, but recognises that without minor maintenance, the tap may break in the future.

**Householder and Carer interviews**

The Householder and Carer interviews used many standard questions from previous surveys of Indigenous people conducted by the Australian Bureau of Statistics, including the National Health Survey (Aboriginal and Torres Strait Islander Results) 2001 and the National Aboriginal and Torres Strait Islander Social Survey 2002 (Australian Bureau of Statistics 2001, 2002b). Below we discuss additional elements that were incorporated into these Interviews, along with related issues of language, pilot testing and ethical review.

Additional elements that were incorporated into the Householder and Carer Interviews included a *Community Position* question. This variable was included in recognition that conventional measures of socioeconomic position might not be appropriate for Indigenous populations (for example, Hunter 1999). This novel question asked whether someone in the household held a position of power in the community (e.g. town councillor, housing committee, or health board member). The Indigenous researcher (HU) suggested this might be a more valid way to assess social status within a community. It might also be a potentially important factor in housing allocation and prioritisation for maintenance work. Other questions aimed at capturing culturally relevant aspects of household composition and process asked whether householders lived on their traditional lands, and if not, how often they visited these lands.

**Language**

In the 11 communities participating in the study, dozens of Indigenous languages are spoken. It was not technically or financially feasible to translate the Householder and Carer Interviews into all of these Indigenous languages. Instead, plain English was selected as the most appropriate method of communicating with a diverse population of Indigenous people.

Where it was anticipated that questions might be ambiguous or confusing, *alternative equivalent wording* was included on the Interview form. This was particularly useful with psychosocial scales, where it was important to ensure the question was clear, but for methodological reasons the wording could not be significantly changed. Rather than the researchers spontaneously providing alternative wording where they perceived that the meaning was not clear, the team discussed acceptable alternative wording and included this on the form. For instance, under the statement “It is easy for me to stick to my aims and achieve my goals”, the plain English word “reach” was suggested as an alternative to “achieve”. This approach protected the quality of the data by recognising the need for researchers to use alternative wording when working in a cross-cultural context.

**Pilot testing**

Developmental versions of the instruments were pilot tested in three communities not included in the main study. Subsequent versions of the instruments, incorporating additional cultural elements discussed
above, were piloted at an educational setting in Darwin with Indigenous people from remote communities. This important phase in the development of the data collection process ensured the length of interview was acceptable, enabled the ideal ordering of the questions to be established, and identified areas where ambiguity still remained in the questions. After the first field visit to the first community, further minor changes were made to the survey forms.

**Ethical review**

Ethical approval was obtained from two Human Research Ethics Committees (HRECs) in the Northern Territory, as the study involves communities in both the Central Australia and Top End regions. Both of these ethics committees had sub-committees comprised wholly of Indigenous people, ensuring that the proposal was satisfactory from an Indigenous as well as a Western ethical perspective. The engagement with the two ethics committees led to some changes in the survey tools used. There was concern about the length of the surveys, and further pilot testing was done to ensure that the Householder and Carer Interviews could be completed in 30 minutes.

The broader issue of benefit to communities was also raised through the HREC process. One aspect of benefit raised was the ability of the project team to ensure that damaged infrastructure was repaired. Unlike some housing projects, this research project was not designed to bring in external maintenance providers. Rather, the project integrates into existing maintenance services in the community. In the long-term, the HICH study aims to contribute to the development of sustainable solutions and capacity building, through the engagement of communities in the survey process and feedback of data in a form desired by community councils and other agencies. In the short-term, the immediate provision of information on requirements for urgent housing repair to the Housing Office (see below) benefited many in the community by facilitating a long-neglected repair. The HRECs also questioned whether the project team was aware of the potential policy implications of the project, and the subsequent need to report findings with sensitivity to ensure communities benefited in the long-term. The resolution of these issues was assisted by face-to-face discussion between the Principal Investigator (RB) and the HRECs, which clarified their concerns and allowed appropriate solutions to be determined. While the process of obtaining ethical clearance was frustrating at times, we believe it led to some improvements in the study design.

**Engaging Communities in the Study**

Simultaneously with the process of survey design, the research team worked at engaging communities in the study. As mentioned above, community selection was influenced by the degree of housing infrastructure development due to take place over the study period. Communities with more housing construction relative to population size were a priority for inclusion in order to maximise the number of children exposed to improved household infrastructure. Other considerations included architectural diversity, geographic spread, construction timeframes, and a history of previous environmental health upgrades.

Communities identified as potential participants were initially telephoned advising them of the project, with all of those contacted expressing a high level of interest in the research. The telephone calls were then followed up with letters and project information sheets, and the option of a site visit for further consultation. The project team personally knew many of the community council staff that they telephoned, as they had met them or worked with them before in their previous positions (as Environmental Health Officer and Housing Officer). These existing relationships were important to facilitating good communication and thereby
establishing trust in the project. In fact, the only instance where a community requested that the project team visit the community to explain the project in person was where a preexisting relationship did not exist. The project was discussed at a meeting of each Community Council before it formally agreed to participate.

Through this consultation process, councils made some suggestions concerning the length of the surveys. They also raised concerns about councils being exposed to criticism in the reporting of results which could potentially lead to reduced funding. Discussions between the research team and council staff were able to establish a common understanding of the issues at stake, and the trust built during these discussions was beneficial to the project as a whole. Continuing engagement of community organisations through discussion of study progress and feedback of findings has also been important in maintaining good relationships.

Remote Indigenous communities are dynamic places, and conditions relevant to the conduct of research can change quickly. Researchers need to maintain frequent contact with communities prior to field visits, and be prepared to change their plans at short notice. Even with the most meticulous planning, unanticipated community events can affect data collection. In one community, although a homicide had occurred in the community the previous week, the council indicated that the community was still happy for the researchers to visit and collect data. During that visit, when research participants were asked as part of the interview, “Has someone dying been a worry for you in the last year?” all respondents answered that it had, illustrating that a single death affects the whole community.

At another community, a death occurred during the field visit. The researcher present suspended data collection and was able to offer to drive community members to the funeral in his vehicle; a gesture that was much appreciated as transport options in remote communities are always limited. This use of project resources for this purpose is an illustration of the Aboriginal and Torres Strait Islander ethical principles of reciprocity and spirit and integrity, which encompass the need to ensure that communities perceive that they are benefiting from the project, a preparedness to modify the research in light of community needs and aspirations, and the need to show respect for the richness and integrity of Indigenous cultures (NHMRC 2003). An unexpected outcome was that during the next field visit, the researcher was recognised by more community members, assisting with the smooth conduct of fieldwork when it resumed.

**Conduct of fieldwork in the communities**

Interviews were conducted face-to-face by trained researchers, including an Indigenous man with extensive experience working in the housing sector in many parts of the territory (HU), and a non-Indigenous man with extensive experience working with NT Indigenous communities as an Environmental Health Officer (PD). The first round and part of the second round of data collection was carried out by this team. In late 2004, the non-Indigenous researcher left the project, and a non-Indigenous woman with experience in housing policy in the NT (KL) joined the team.

**Engaging community agencies**

Prior to the planned visit, researchers would re-send information about the study to the council chairman, and maintain frequent contact with the council to ensure that nothing had occurred in the community (such as a death) that could make the timing of the visit inappropriate. When the researchers arrived at the community, they would first visit the council, and meet with Indigenous councillors, the housing officer, and often the town clerk. Permission would be sought again to conduct fieldwork.
Council workers and representatives would then assist the team in identifying an appropriate community member to work with the team during their field visit. As the study involves approaching people in their homes, this measure was important to ensure that the researchers acted in a culturally appropriate way and community members felt their privacy was being respected. In some cases the person would also act as an interpreter. Often, a Community Development Employment Program (CDEP) worker would be recruited for casual work with the research team. In other communities, an Environmental Health Worker or Aboriginal Health Worker would be identified as the most appropriate person. Often the casual worker initially identified would not work with the study for the duration of the visit (approximately two weeks), due to conflicting family and cultural commitments, and alternative workers were identified. At times where assistance from a local community member could not be accessed, permission was sought from council representatives to visit houses without a local person accompanying the researchers. Generally, this was acceptable after the team had been in the community for some days.

**Approaching potential research participants**

All houses in the community were identified using the Serviced Land Availability Plan (SLAP) held in the community housing office. Houses occupied by non-Indigenous people were excluded. The remaining houses were systematically visited and occupants were asked whether children under seven resided in the house. These households were given information about the study and invited to participate. If they consented to participate in the study, the interviews were generally conducted at that time. Most householders preferred to have the Housing Survey done at the same time, while others opted for it to be done a few days later.

As this population has a high rate of mobility, 7.8% of households approached by the researchers in the first round of data collection were not home throughout the field visit (typically a two-week period), and had to be excluded from the study. The rate of refusal to participate among eligible households was low (3.5%). Of those who participated, 5.7% declined access to the inside of the house for the Housing Survey, reflecting the sensitivity of this aspect of data collection.

**Informed consent**

The team is committed to informed consent as a legal and ethical requirement to ensure that participation in the research is voluntary. An important element of this was the provision of a plain English Information Sheet. However, to ensure that participants were appropriately informed of the study, a visual resource was also designed by the Indigenous researcher to enable ‘The HICH Story’ to be told in a culturally-appropriate way (see Figure 3). A plain English script was devised for either researcher to use in explaining the study. In practice, the script acted as a prompt rather than being followed precisely, but the process of devising the script was important for the team in developing ways to explain the study. The consent process was considered to be an opportunity to engage people in the study as well as an ethical requirement.

The consent form included a checklist of information required to be covered in the consent process. This checklist was useful in reinforcing the information received in the HICH Story and the form was generally read out by the researcher prior to the participant signing it.

**Effect of researcher characteristics**

The gender and Indigeneity of the researchers had an effect on their ability to carry out the data collection, particularly for the Indigenous researcher. Cultural norms meant it was usually inappropriate for the Indigenous researcher to interview women...
younger than him, while this was not the case for the non-Indigenous researchers. The ability of the two researchers to work in a team was thus essential.

The Indigenous researcher had family connections in a number of study communities, which assisted with community members being comfortable with the presence of the researchers in the community. The male non-Indigenous researcher had been adopted previously into the East Arnhemland kinship system. Within that region, those kinship connections made both the community members and the researchers more comfortable with the process of approaching potential research participants. The male non-Indigenous researcher would also go to some lengths to indicate his trustworthiness and legitimacy through his actions. For instance, when approaching a house, rather than shy away from any barking household dogs, he would approach the dog, sit down and pat it. This simple action could generate a sense of trust and legitimacy among household members.

The language skills of researchers were also useful in some places. The Indigenous researcher spoke the Indigenous languages in communities in his home region, and the male non-Indigenous researcher had conversational language skills in another region where he had spent some time.

As mentioned above, part way through data collection, the male non-Indigenous researcher left the team and was replaced by a female researcher. Orientation to study instruments and processes, including cross-cultural interviewing techniques and protocols for working in communities was provided by experienced members of the team. This process inevitably impacted on study timelines and budgets as it took some time and required hands-on training and mentoring in the field. However, this attention to the development of cultural

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**Figure 3: Visual resource for telling the HICH story**

[Diagram of community layout and research connections]
competence was considered crucial. Without guidance and mentoring for inexperienced researchers, the research is likely to be more difficult, more time-consuming (and thus expensive), and involve more risks to the project, such as poor participation rates, inaccurate questionnaire data or inconsistent recording of data between researchers, and offending research participants. If it is possible to engage an Indigenous researcher or a non-Indigenous researcher with experience working in Indigenous communities, the enhanced cultural competency of the project team is likely to be rewarded (Kearns & Dyck 2005).

As the above discussion illustrates, recruitment is of the utmost importance for projects such as this one. The researchers must be culturally competent and ideally have experienced both the setting and the subject matter. A team of an Indigenous and a non-Indigenous researcher was ideal, as both Indigeneity and non-indigeneity have advantages in particular circumstances. Within that team, the non-Indigenous researcher must be mindful of the cultural protocols that must be followed and also the particular effects of these protocols on the Indigenous researcher. A well functioning team of an Indigenous and a non-Indigenous researcher can assist in facilitating the trust required for research participants to feel comfortable with potentially sensitive research projects such as this one. Decision support from a principal investigator familiar with the challenges of this research (RB) was also important at times.

Confidentiality
In telling the HICH story, it was important to stress that all the information provided to the researchers would remain confidential. However, within the family group, there was usually no desire for information to be kept from other family members. People preferred to be interviewed in family groups, invariably sitting under a tree outside their house with the senior family members present, and younger members coming and going as interest and responsibility dictated. The family often operated collectively in answering questions posed to one family member. For example, when asked how many cigarettes a person smoked in a usual day, up to five people would all count, confer and agree before a final answer was given to the researcher. Sometimes, discussion within the group was necessary as family members interpreted the questions into the local language, usually younger people translating for older people.

This approach does pose some ethical and methodological issues. Ethically, it was important to stress to the person being interviewed that they could talk to the researchers alone if they wanted to, thus ensuring that the group interview setting was voluntary. One way this was achieved in a culturally appropriate way was to ask the participant if they preferred to be interviewed where they were (sitting in their family group), or if they would prefer to move to a spot nearby.

Methodologically, for most questions it was not a concern if the family group answered collectively, but for some questions such as the psychosocial scales, this was problematic. For these sections of the interview, researchers had to ensure that only the answer of the interviewee was recorded.

Reliability surveys
An important assessment of the reliability of a survey is the stability of results over time. This is assessed using the ‘test-retest’ method (Streiner & Norman 1995). Ideally, a smaller representative sample of research participants should be asked to complete the interview again, some time (two days to two weeks) after the initial interview was completed. While the answers to some questions may have changed in that time, most of the answers should remain the same if the survey instrument is reliable in a statistical sense.
In practice, this proved difficult to implement. It was challenging to explain why we were asking the same questions again to those approached to complete the reliability surveys. People felt they, rather than the survey instrument, were being tested, and some were resentful. It was also difficult to obtain a representative sample, as finding research participants randomly chosen for reliability surveys was resource-intensive and they would commonly decline to answer the questions again.

Several compromise solutions were devised by the research team. The reliability survey was shortened so that some questions from each section of the interview remained, but fewer questions were asked overall. The researcher would explain that the reliability surveys were to check whether the researcher had collected the correct information, rather than whether the participant had answered correctly. The research team also resorted to an opportunistic sample for the re-test data, as achieving a representative sample was not feasible for the reasons discussed above.

These compromises meant that the validity of the test-retest data is less than optimal. This is a good example, however, of the compromises between feasibility and methodological rigour that are inherent to research in this setting. Timely, open and honest discussion within the research team of problems such as these is essential to finding solutions early in the data collection process.

### Providing Feedback to Communities

It is important that communities both perceive and receive benefits from health research projects in which they participate (Kimberley Aboriginal Health Workers 1992; NHMRC 2003). There are many forms that these benefits can take, and different stakeholders have different perspectives (Bailie & Paradies 2005). In this project, councils were particularly interested in timely feedback regarding the state of household infrastructure, as they perceived this would be useful in lobbying for funding for additional housing stock. Health centre staff are particularly interested in the Child Health Audit data as a means of assessing their performance and for planning purposes. The research team saw the feedback process as an opportunity to promote environmental health as an essential health development strategy for the whole community. The broader benefits of the study - a better understanding of the relationships between child health and the household - will have a delayed effect on communities, for example, through the development of maintenance, ‘homemaker’ support and housing allocation processes that maximise health benefits for the community.

As part of the research team’s concern that communities both perceived and received benefits from the study, five levels of feedback were planned and budgeted for from the outset (see Table 1).

<table>
<thead>
<tr>
<th>Timing of feedback report</th>
<th>Audience</th>
<th>Content of report</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 At the end of data collection visits</td>
<td>Housing Office</td>
<td>All repairs required, with urgent repairs highlighted</td>
</tr>
<tr>
<td>2 After first round of data collection in community</td>
<td>Council (including Housing Office, health clinic)</td>
<td>Aspects of household infrastructure, centred on the ability of householders to perform Healthy Living Practices</td>
</tr>
<tr>
<td>3 After second round of data collection in community</td>
<td>Council, health clinic</td>
<td>Changes in aspects of household infrastructure between the two rounds of data collection, centred around HLPs</td>
</tr>
<tr>
<td>4 After Child Health Audit in community</td>
<td>Council, health clinic</td>
<td>All community results including changes across study period; comparative data on community infrastructure.</td>
</tr>
<tr>
<td>5 After data collection in all communities completed</td>
<td>Council, health clinic, other agencies (e.g. school), whole community</td>
<td>Results for entire study (centering on aspects of concern to each community)</td>
</tr>
</tbody>
</table>
All feedback reports were designed to present a manageable amount of information, to be meaningful to the audience and to be useful for their purposes. An important issue was the comparison of results between communities within the study, and the comparison of study communities to non-Indigenous household data. It is often said that remote Indigenous communities do not like being compared to other communities, and particularly resent being compared to mainstream communities. This relates to communities being inundated with negative stories that can be detrimental to community esteem (Brough 1999). Thus sensitivity and consultation were required to balance the need to provide useful and accurate information and the need to present results in an acceptable and constructive manner.

One solution to this is to concentrate on the change in results over the study period within a community. As new houses have been built in all study communities, all communities that have received the third round of feedback to date (five communities) have experienced improvements in household infrastructure over the study period. Thus the feedback reports can include a positive story, and positive validation can be provided to the housing office and council. This facilitates the communication of more confronting findings in a constructive way.

Another strategy has been to use the concept of ranking study communities, rather than comparing them to non-Indigenous data. Communities are ranked for selected data items, and communities are informed of where in the ranking their community was positioned. The community can thus be informed in a sensitive and constructive way of whether an issue is a particular problem, or whether they are doing relatively well. The issue of what to feed back and what form this should take clearly requires ongoing consultation with all study communities, as communities have different interests and preferences.

**Conclusion**

Our experience of conducting research in remote Indigenous communities has been rewarding, but not without significant methodological, ethical and personal challenges. Methodological decisions regarding the language and length of surveys must balance data quality and acceptability with data quantity and detail. Although these decisions must be initially made at the stage of project design, they will inevitably be revised in response to ethical review, community consultation and pilot testing.

In the conduct of data collection, the context of remote Indigenous communities raises particular issues for engaging local research assistance, approaching potential research participants, gaining informed consent, confidentiality, and assessing survey reliability. We consider the two single most important factors for addressing these issues are careful recruitment of the research team, and the need for flexibility in responding to changing community conditions.

Ongoing research and evaluation have an essential role in addressing the poor state of environmental health in remote Indigenous communities. However, as we have demonstrated, research in this setting poses numerous challenges. Building the body of research literature that discusses these challenges will contribute to developing research and evaluation knowledge and skills in this critical area.

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Endnotes
1 Fieldwork experiences in other areas of Indigenous health have been described, however. See Donavon & Spark 1997; Holmes et al. 2002; Eades & Read 1999; Henderson et al. 2002.

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