Reducing medication misadventure.
A comparative analysis of telepharmacy and home medication reviews

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Background

Demographics

- 81% very remote
- 64% ATSI
- 26% > 45

10 primary health clinics no onsite pharmacists
Why Telepharmacy

• 2-3% hospital admissions medication related
• HMRs traditionally addressed this issue
• HMR funding and travel restrictions
• Rothwell et al ‘telehealth can enhance provision of pharmacy consultation ‘.”
Method: Telepharmacy Service Model Trial

Aims

• Develop and provide a telepharmacy service that will support individualised, culturally appropriate medicine education/counselling to outpatients and improve quality use of medicines

• Compare and contrast the feasibility, sustainability and efficacy of HMRs and telepharmacy
The service model

1. **Patient Identification**
   - Targeted patient identification used rather than direct patient advertising to generate referrals.

2. **Referral**
   - Patients can be referred by a MO, RN or other health professional based on the referral criteria.

3. **Appointment booked**
   - Pharmacist books appointment through Outlook and all parties are notified.

4. **Consultation**
   - Consultation ranges from 20-45 minutes with individualised patient medication discussion.

5. **Documentation**
   - Report provided to MO with recommendations
   - Culturally appropriate medicine list provided to patient.
Evaluation Methods

- Clinical variables – OOS, number and type of interventions/recommendations, attendance rates and variables
  - Clinical efficacy of medication review
  - Cost analysis of service
  - Patient safety - adherence data
  - Patient satisfaction – survey
Evaluation findings
Service model trial

- Occasions of service

<table>
<thead>
<tr>
<th></th>
<th>Aurukun</th>
<th>Mapoon</th>
<th>Napranum</th>
<th>Pormpuraaw</th>
<th>Kowanyama</th>
<th>Weipa</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMRs</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>13</td>
</tr>
<tr>
<td>Telepharmacy</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>10</td>
<td>15</td>
<td>0</td>
<td>32</td>
</tr>
</tbody>
</table>

- Demographic analysis

<table>
<thead>
<tr>
<th></th>
<th>Average age (years)</th>
<th>Average number of medicines per patient</th>
<th>Female</th>
<th>Using dose administration aid (DAA)</th>
<th>3 or more Chronic medical conditions</th>
<th>Diabetes patients</th>
<th>Aboriginal or Torres Strait Islander patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMRs</td>
<td>58 (35-84)</td>
<td>10.5</td>
<td>54%</td>
<td>100%</td>
<td>92%</td>
<td>62%</td>
<td>92%</td>
</tr>
<tr>
<td>Telepharmacy</td>
<td>60 (36-78)</td>
<td>8.2</td>
<td>50%</td>
<td>97%</td>
<td>97%</td>
<td>75%</td>
<td>100%</td>
</tr>
</tbody>
</table>
Clinical Efficacy of Medication Review

<table>
<thead>
<tr>
<th>Type of Intervention</th>
<th>OOS</th>
<th>Average number of medicines per patient</th>
<th>Number of pharmacist interventions/recommendations</th>
<th>Average Number of pharmacist interventions/recommendations per patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMRs</td>
<td>13</td>
<td>10.8</td>
<td>34</td>
<td>2.6</td>
</tr>
<tr>
<td>Telepharmacy</td>
<td>32</td>
<td>8.0</td>
<td>73</td>
<td>2.3</td>
</tr>
</tbody>
</table>

![Bar chart showing number of interventions/recommendations by type and service.](chart.png)
Evaluation findings
Service model trials

Adherence data

- Data was collected for the 12 weeks preceding the consult and 12 weeks after to determine improvements in adherence
  - a ratio >1 represented improvement

• Telepharmacy -> 1.32 (7 patients assessed)

• HMRs -> 0.97 (4 patients assessed)
## Evaluation findings

### Service model trials

**Cost**

<table>
<thead>
<tr>
<th></th>
<th>Telepharmacy</th>
<th>HMRs (all)</th>
<th>HMRs (Napranum, Mapoon, Weipa)</th>
<th>HMRs (Aurukun only)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total expenses</strong></td>
<td>$6,869.20</td>
<td>$3,538.52</td>
<td>$1,874.92</td>
<td>$1,763.60</td>
</tr>
<tr>
<td><strong>Total expenses</strong></td>
<td>$4,730.00</td>
<td>$2,597.32</td>
<td>$1,223.32#</td>
<td>$1,474.00#</td>
</tr>
<tr>
<td><strong>Average cost per service</strong></td>
<td>$214.66</td>
<td>$279.89</td>
<td>$208.32</td>
<td>$440.90</td>
</tr>
<tr>
<td><strong>Average cost per service</strong></td>
<td>$147.81</td>
<td>$207.49</td>
<td>$135.92</td>
<td>$368.50</td>
</tr>
<tr>
<td><strong>Average income per service</strong></td>
<td>$315.00</td>
<td>$230.16*</td>
<td>$210.93</td>
<td>$273.43*</td>
</tr>
<tr>
<td><strong>Revenue from service</strong></td>
<td>$3,210.80</td>
<td>-$646.43</td>
<td>$23.45</td>
<td>-$669.88</td>
</tr>
<tr>
<td><strong>Net profit per service</strong></td>
<td>$167.19</td>
<td>$22.67</td>
<td>$75.01</td>
<td>-$95.07</td>
</tr>
<tr>
<td><strong>Number of services required to break even</strong></td>
<td>13</td>
<td>42</td>
<td>9</td>
<td>Unable to calculate as making a loss each service</td>
</tr>
</tbody>
</table>

*Including rural allowance, which is $125 when over 200km (round trip) travelled
# Calculated as an equivalent percentage i.e. 9 out of 13 HMRs performed which is 69% of total fixed costs for Napranum, Mapoon and Weipa; 4 out of 13 for Aurukun which is 31% of total fixed costs.
Evaluation findings
Service model trials

Patient satisfaction – telepharmacy

• 11 surveys completed
  – 100% of respondents stated ‘Yes’ for 5 out of the 7 questions
  – Two comments:
    • “It’s good” and “Chris is alright”
• Response rate 35%
• There was no evidence of reluctance to engage in telehealth
Barriers and Limitations

**Barriers**
- Attendance rate 76% for telepharmacy
- Turnover of staff at recipient staff
- Engagement of clinics
- Pharmacist working 0.2 FTE

**Limitations**
- Small sample size
- Not a rigorous cost analysis
- Adherence data
Conclusion

• Efficacy and satisfaction levels similar between telepharmacy and HMRs

• Technology was not a barrier to service delivery

• Telepharmacy delivery is a more cost effective way to deliver medication management reviews to remote communities, due to the current HMR funding model, which is not financially viable for communities where there is significant distances to travel.
Efficacy similar between telepharmacy and HMRs. Technology was not a barrier to service delivery. Telepharmacy delivery is a more cost-effective way to deliver medication management reviews to remote communities, due to the current HMR funding model, which is not financially viable for communities where there is significant distances to travel.

Questions?